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# DETERMINANTS OF ESG POLICY TRANSPARENCY: EVIDENCE FROM PALM OIL COMPANIES IN SPOTT ASSESSMENTS

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**Abstract**

This study investigates the determinants of ESG policy transparency among 100 global palm oil companies using the November 2025 Sustainability Policy Transparency Toolkit (SPOTT) assessment data. Employing multiple linear regression analysis, this research examines the effects of supply chain integrity, ownership structure (public-listed vs. private), headquarters location, and media exposure on the overall ESG transparency score. The results indicate that supply chain integrity is the strongest and most significant predictor of ESG transparency ($\beta = 0.994$, $p < 0.001$). Public ownership also shows a significant positive effect ($\beta = 2.13$, $p = 0.001$). In contrast, headquarters' location in stringent ESG regulatory regions and media exposure do not significantly influence transparency levels. Category analysis reveals that companies demonstrate relatively higher transparency in social and environmental aspects but remain notably weak in downstream processing categories (crusher, refiner, and trader). This study concludes that improving ESG transparency in the palm oil industry is best achieved through strengthening internal supply chain traceability and governance rather than relying primarily on external pressures. These findings offer important implications for palm oil companies, investors, and policymakers seeking to meet rising global transparency standards, particularly considering regulations such as the EU Deforestation Regulation (EUDR).

**Keywords:** ESG Transparency; Palm Oil, Supply Chain Traceability; Ownership Structure, SPOTT; Sustainability Disclosure

## INTRODUCTION

The global palm oil industry is currently under intense scrutiny due to its significant environmental and social footprints. As the world's largest producer, Indonesia faces a dual challenge: maintaining its economic dominance while complying with increasingly stringent global sustainability standards. The emergence of the European Union Deforestation Regulation (EUDR) has further escalated the pressure on Indonesian firms to demonstrate higher accountability, making transparency no longer an optional corporate social responsibility (CSR) initiative but a critical survival mechanism for market access (Lambin et al.,2018). Before examining the dynamics within the palm oil sector, it is essential to establish a clear conceptual foundation for ESG transparency. Environmental, Social, and Governance (ESG) transparency refers to the extent to which a company publicly discloses comprehensive, verifiable, and standardized information regarding its environmental impact, social responsibilities, and governance practices (Aman & Lucianetti, 2025). Unlike traditional financial reporting, which centers on economic performance, ESG transparency encompasses a broader spectrum of non-financial disclosures that reflect a firm's relationship with the natural

environment, its workforce, local communities, and the mechanisms of corporate oversight and accountability (Kuzey & Uyar, 2017).

The environmental dimension of ESG transparency includes disclosures related to greenhouse gas emissions, deforestation policies, biodiversity conservation, water usage, and waste management. The social dimension covers labor rights, community engagement, occupational health and safety standards, and human rights due diligence throughout the supply chain. The governance dimension addresses board composition, anti-corruption measures, executive compensation, and the integration of sustainability considerations into corporate decision-making (Deegan, 2019). A firm is considered transparent not merely when it publishes a sustainability report but when its disclosures are detailed, evidence-based, publicly accessible, and aligned with internationally recognized standards such as those provided by the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD), or the Sustainability Policy Transparency Toolkit (SPOTT) developed by the Zoological Society of London.

However, most existing literature on ESG transparency focuses on developed market contexts or broad industrial sectors, often overlooking the specific operational drivers within the palm oil industry (Lerskullawat & Ungphakorn, 2024). There is a notable research gap in understanding how technical operational readiness such as supply chain integrity dictates the level of policy transparency a firm is willing to disclose (Bastian & Zentes, 2013). Furthermore, previous studies often utilize outdated data that does not reflect the rapid regulatory shifts occurring post-2024. This research fills this gap by utilizing the most recent SPOTT assessment data from November 2025. By analyzing 100 global palm oil companies, this study provides a real-time snapshot of corporate behavior in response to the latest global ESG requirements (Ruysschaert et al., 2019). In the Indonesian context, the urgency of this study is underscored by the nation's struggle to harmonize its domestic certification (ISPO) with international benchmarks like RSPO and SPOTT (Hidayat et al., 2015). While the Indonesian government has made strides in mandatory reporting, the extent to which these firms can provide transparent ESG data remains inconsistent (Aman & Lucianetti, 2025).

Central to this investigation is the role of supply chain integrity. It is argued that a company cannot transparently report what it cannot track. For many plantation companies, the lack of transparency is often a reflection of underlying technical incapacities in tracing fresh fruit bunches (FFB) back to the source (Kadarusman & Pramudya, 2019). This study positions supply chain integrity as a foundational infrastructure that enables credible ESG disclosure rather than just a secondary reporting factor. Moreover, the influence of external pressures such as media exposure and headquarters location remains debated (El Ghoul et al., 2019). While legitimacy theory suggests that highly visible firms are more transparent to mitigate public scrutiny, the global sustainability convergence hypothesis suggests that international regulations are now flattening in differences (Bradford, 2020). By integrating signaling and legitimacy theories, this research aims to analyze the determinants of ESG policy transparency. The findings are expected to provide strategic recommendations for Indonesian practitioners in strengthening internal audit capabilities to safeguard the industry's reputation (Hutabarat et al., 2024).

This study is anchored in the theoretical synthesis of legitimacy theory and stakeholder theory to elucidate the drivers of ESG transparency. Legitimacy theory posits that organizations operate under a social contract, wherein they must continuously demonstrate that their activities align with the values and norms of the society in which they function (Suchman, 1995). Within the global palm oil industry, which is perpetually shadowed by environmental controversies, transparency serves as a strategic mechanism to bridge the legitimacy gap that arises when public expectations exceed perceived corporate performance (Islam & Deegan, 2008). Complementing in perspective, stakeholder theory argues that corporate disclosure is a deliberate response to the demands of specific groups such as institutional investors, global buyers, and NGOs who possess the power to influence critical resource allocations (Freeman & Dmytriyev, 2017). Together, theories suggest that transparency is not a mere altruistic act but a calculated management strategy to maintain organizational survival in a highly scrutinized global market (Deegan, 2019).

## METHODS

The architecture of this study is built upon a quantitative explanatory research design, specifically tailored to unearth the causal relationships between corporate determinants and environmental transparency. By adopting this approach, the study moves beyond mere description to provide an analytical depth that explains why certain palm oil entities choose radical openness while others maintain a veil of opacity. The scope is inherently global, transcending national boundaries to reflect the interconnected nature of modern agribusiness. This design is particularly pertinent in the 2025 landscape, as it captures the immediate corporate reactions to the maturation of international sustainability mandates, providing a snapshot of institutional evolution in real-time.

The study defines its population as the entire spectrum of global palm oil companies whose operations possess a systemic impact on the world's supply chains. For the sampling procedure, a census or total sampling technique was applied by incorporating the complete cohort of 100 companies assessed in the latest November 2025 update of the Sustainability Policy Transparency Toolkit (SPOTT). This exhaustive sample size is deliberate; it ensures that the analysis encompasses a diverse organizational tapestry, including high-profile public listed conglomerates, influential private groups, and state-owned enterprises. By including the full SPOTT assessment list, the study avoids sampling bias and provides a comprehensive reflection of the industry’s transparency trends across Southeast Asia, Africa, and Latin America.

The empirical evidence for this study was gathered through systematic secondary data documentation, emphasizing sources that are standardized and publicly verifiable. The primary repository was the SPOTT digital platform, which provides a meticulously audited database of transparency scores and media-reported incidents. This was supplemented by an intensive archival search of annual reports, sustainability disclosures, and official corporate filings to verify nuances in ownership structures and jurisdictional domiciles. The data collection phase was concluded in late 2025, ensuring that the metrics used reflect the most current corporate behaviors and environmental policies available to the public and investors.

The data were subjected to inferential statistical analysis using a multiple linear regression model to test the validity of the hypothesized relationships. Before the hypothesis testing, a suite of classical assumption tests was conducted to satisfy the requirements of robust statistical inference; these included normality tests to confirm the data distribution,

multicollinearity checks via Variance Inflation Factor (VIF) values, and heteroscedasticity assessments. The core relationship between the determinants and transparency is expressed through the following regression equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Z + \varepsilon \quad (1)$$

In this formulation, $Y$ represents the ESG Policy Transparency Score (SPOTT Score), $\alpha$ is the constant (intercept), β1 to $\beta_5$ are the regression coefficients for the independent and control variables, $X_1$ = Supply Chain Score, $X_2$ = Ownership Public (dummy variable: 1 = public-listed), $X_3$= HQ_Strict (dummy variable: 1 = headquartered in stringent ESG regulation regions), $X_4$ = Media Exposure, Z = Total Indicators  Averages around 150–190 for most firms, with higher-indicator firms generally having more opportunity for points but also potentially more scrutiny and ε denotes the error term (residual). This analytical framework was chosen for its ability to isolate the partial effect of each determinant, thereby providing a clear hierarchy of which factors most significantly drive the transition toward a more transparent and sustainable palm oil industry.

To ensure the precision of the statistical estimates, each variable has been operationalized through established proxies that align with current accounting and sustainability literature. The following table delineates the measurement framework for the model:

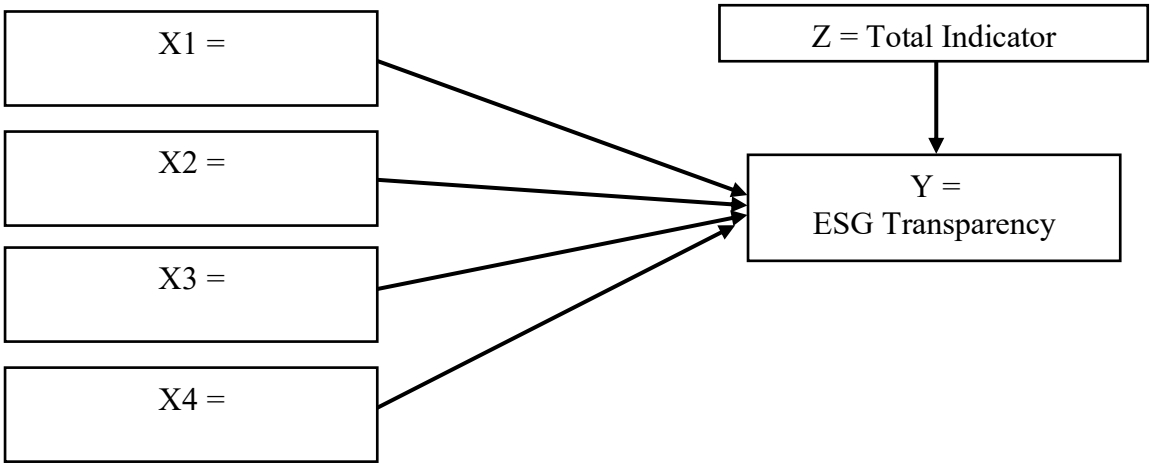
**Table 1. Operational Definition of Research Variables**

| Variable | Type | Operational Definition | Indicators |
|---|---|---|---|
| ESG Policy Transparency (Y) | Dependent | The total percentage score (0–100%) assigned by SPOTT, reflecting the fulfilment of public disclosure indicators across social, environmental, and governance categories (ZSL SPOTT, 2025). | (1) Availability of publicly accessible sustainability policy documents; (2) Disclosure of environmental commitments, including zero-deforestation and peatland protection pledges; (3) Disclosure of social commitments, including labour rights, Free Prior and Informed Consent (FPIC), and community engagement policies; (4) Governance disclosures, including board-level oversight of sustainability and the existence of formal grievance mechanisms; (5) Evidence of policy implementation and third-party verification or monitoring. |
| Ownership Structure ($X_1$) | Independent | The legal listing status of the firm, measured via a dummy variable: 1 for public-listed companies and 0 for private or state-owned entities (Lerskullawat & Ungphakorn, 2024). | (1) Listing status on a recognised national or international stock exchange; (2) Regulatory filing obligations under securities regulations, including mandatory annual report submissions; (3) Presence of dispersed institutional and retail shareholding structures subject to capital market disclosure requirements. |
| Supply Chain Integrity ($X_2$) | Independent | The specific sub-score for supply chain traceability within the SPOTT framework, indicating the firm's demonstrated ability to map and verify its raw material sources (Bastian & Zentes, 2013). | (1) Percentage of fresh fruit bunches (FFB) traceable to the mill level; (2) Percentage of FFB traceable to the plantation or smallholder level; (3) Public identification and disclosure of third-party supplier lists; (4) Existence of formalised supplier monitoring and compliance programmes; (5) Availability of geolocation data for production units, in accordance with EUDR requirements. |

| Variable | Type | Operational Definition | Indicators |
|---|---|---|---|
| Media Exposure ($X_3$) | Independent | The frequency of distinct media incidents or reports recorded on the SPOTT platform, representing external stakeholder pressure and public visibility (El Ghoul et al., 2019). | (1) Total number of media-reported incidents categorised by type (environmental, social, governance); (2) Frequency of media mentions documented on the SPOTT platform over the assessment period; (3) Breadth of incident types covered, including deforestation, labour violations, land conflicts, and corruption allegations. |
| Headquarters Location ($X_4$) | Independent | A dummy variable representing regulatory intensity: 1 for companies headquartered in high-mandate ESG regulatory regions (European Union, United Kingdom, Singapore) and 0 for all other jurisdictions (Bradford, 2020). | (1) Country or jurisdiction of the registered corporate headquarters; (2) Presence of mandatory ESG reporting regulations in the home jurisdiction, such as the EU Non-Financial Reporting Directive (NFRD) or its successor, the Corporate Sustainability Reporting Directive (CSRD); (3) Applicability of cross-border sustainability regulations to firms domiciled in that jurisdiction, including the EUDR and the UK Environment Act. |
| Total Indicators (Z) | Control | The total number of SPOTT indicators applicable to each company, averaging approximately 150–190 indicators, reflecting the breadth and scope of the assessment based on the firm's operational profile (ZSL SPOTT, 2025). | (1) Number of applicable SPOTT indicators determined by the company's operational scope; (2) Breadth of assessed operational categories, including grower, crusher, refiner, and trader segments. |

Source: Operational Definition of Research Variables, 2026

## Research Framework




Sources: Data processed by researchers (2026)

**Figure 1. Theoretical Framework**

**Hypotheses**

H1: Publicly listed companies demonstrate a higher level of ESG policy transparency compared to private entities.

H2: Supply chain integrity scores are positively associated with the total level of ESG policy transparency.

H3: Media exposure has a significant positive influence on the extent of ESG policy transparency.

H4: Companies headquartered in regions with stringent ESG regulations exhibit higher levels of ESG policy transparency.

## RESEARCH RESULTS AND DISCUSSION

## RESULTS

### Descriptive Statistics

The SPOTT Score, which measures overall ESG policy transparency, has a mean of 49.50% with a standard deviation of 33.87%. This indicates substantial variation in transparency levels across companies. Scores range from a minimum of 0.00% (several companies at the bottom) to a maximum of 97.50% (SD Guthrie Bhd). The distribution shows that while a small group of leading companies achieves very high transparency, most firms still exhibit moderate to low disclosure levels.

The Supply Chain Score has a mean of 46.30%, which is slightly lower than the overall SPOTT Score, suggesting that transparency in traceability and supplier engagement remains a challenge for many companies. Media Exposure averages 22.69 reports, with a wide range (0 to 199), indicating that some companies face significantly higher public scrutiny than others.

**Table 2. Descriptive Statistics**

| Variable | N | Mean | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| SPOTT Score (%) | 100 | 49.50 | 33.87 | 0.00 | 97.50 |
| Ownership Structure | 100 | 0.46 | 0.50 | 0 | 1 |
| Supply Chain Score (%) | 100 | 46.30 | 33.49 | 0.00 | 97.10 |
| Media Exposure | 100 | 22.69 | 31.26 | 0 | 199 |
| Headquarters Location | 100 | 0.19 | 0.39 | 0 | 1 |
| Total Indicator | 100 | 168.14 | 28.18 | 90 | 192 |

Source: Processed STATA 18, 2026

From the 100 companies, 46% are public-listed and 19% are headquartered in regions with stringent ESG regulations. The descriptive statistics reveal a clear pattern: higher transparency is concentrated among a few top performers, while many companies, particularly smaller or private entities in producing countries, remain at low transparency levels.

### Hypothesis Testing

Multiple linear regression was conducted to test the determinants of ESG policy transparency. The model is specified as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Z + \varepsilon \quad (2)$$

where Y is the SPOTT Score, $X_1$ is Supply Chain Score, $X_2$ is Ownership_Public, $X_3$ is HQ_ Strict, $X_4$ is Media Exposure, and Z is Total Indicator (control variable).

**Table 3. Results of Multiple Linear Regression**

| Variable | Coefficient (β) | Std. Error | t-value | p-value | Significance |
|---|---|---|---|---|---|
| Constant | 7.64 | 1.82 | 4.19 | 0.000 | *** |
| Ownership_Public | 2.13 | 0.62 | 3.45 | 0.001 | *** |
| Supply Chain Score | 0.994 | 0.010 | 98.71 | 0.000 | *** |
| Media Exposure | -0.005 | 0.010 | -0.51 | 0.613 | Not significant |
| HQ_Strict | 0.45 | 0.77 | 0.59 | 0.557 | Not significant |
| Total Indicator | -0.031 | 0.011 | -2.90 | 0.005 | ** |

Notes: *** $p < 0.001$, ** $p < 0.01$ $R^2 = 0.994$, Adjusted $R^2 = 0.993$, F-statistic = 2930 ($p < 0.001$)

Source: Processed STATA 18, 2026

The regression model explains 99.3% of the variance in SPOTT Score, indicating excellent fit. Supply Chain Score is the dominant factor ($\beta = 0.994$, $p < 0.001$). This means that improvements in supply chain transparency almost directly translate into higher overall ESG transparency scores. Public ownership also has a significant positive effect ($\beta = 2.13$, $p = 0.001$), suggesting that listed companies tend to disclose more due to greater market and regulatory pressure.

In contrast, HQ_Strict and Media Exposure are not statistically significant. This finding is surprising because it contradicts the initial expectation that companies headquartered in strict regulatory environments or facing high media scrutiny would show higher transparency. The negative coefficient for Total Indicator indicates that companies assessed on more indicators tend to have slightly lower average scores after controlling other factors.

Classical Assumption Tests with Normality (Shapiro-Wilk): $p = 0.0079$ (mild deviation), Multicollinearity (VIF): All values < 5 (no serious issue), Heteroskedasticity (Breusch-Pagan): $p = 0.0074$ Although the Shapiro-Wilk ($p = 0.0079$) and Breusch-Pagan ($p = 0.0074$) tests indicate deviations from normality and homoscedasticity, the model remains robust through the application of HC3 Robust Standard Errors to correct for potential heteroscedasticity bias. Furthermore, given the sample size (n=100), the Central Limit Theorem suggests that the distribution of the OLS estimators approaches normality, ensuring that the coefficients remain unbiased and valid for inference and Autocorrelation (Durbin-Watson): 1.32 (acceptable range). The Durbin-Watson value of 1.32 is slightly below the ideal range of 1.5–2.5, which typically suggests positive autocorrelation. However, since this study utilizes cross-sectional data from 100 distinct companies at a single point in time, the assumption of independence between observations is maintained. The DW test was conducted for procedural completeness, and the result is deemed acceptable as there is no time-series sequence that would cause serial correlation to bias the results.

An independent samples t-test confirms that public companies have significantly higher SPOTT Scores (mean 62.34%) compared to private companies (mean 38.12%), with $p < 0.001$.The results strongly support the hypothesis that supply chain integrity is the primary driver of ESG policy transparency in the palm oil industry. Public listing also encourages better disclosure, but external pressures such as headquarters location and media exposure do not significantly influence transparency once operational factors are accounted for. These findings suggest that genuine improvements in supply chain management are more effective than reactive responses to external pressure.

The analysis highlights that transparency is strongest in Social and Environment categories, while scores in downstream activities (Crusher, Refiner, and Trader) remain notably low. This

indicates that palm oil companies are more transparent about plantation-level issues but still lag in disclosing processing and trading activities.

**Robustness Check**

To ensure the reliability of the main findings, two robustness checks were conducted.

**Table 4. Independent Samples[MYI4.1] T-Test: Public vs Private Companies**

| Group | N | Mean SPOTT Score (%) | t-value | p-value |
|---|---|---|---|---|
| Public | 46 | 62.34 | 4.87 | 0.000 |
| Private | 54 | 38.12 | - | - |

Source: Processed STATA 18, 2026

The t-test confirms that public-listed companies have significantly higher ESG transparency scores than private companies ($p < 0.001$). This result is consistent with the regression findings and strengthens the conclusion that ownership structure matters.

**Table 5. Average Score by SPOTT Category**

| Category | Mean Score (%) |
|---|---|
| Social | 51.67 |
| Environment | 48.12 |
| Governance | 47.89 |
| Growers | 32.45 |
| Crusher | 18.67 |
| Refiner | 8.92 |
| Trader | 7.34 |

Source: Processed STATA 18, 2026

The analysis by category reveals that companies are most transparent in Social and Environment aspects. In contrast, transparency is notably weak in downstream activities, particularly Refiner and Trader categories. This pattern suggests that palm oil companies tend to focus disclosure efforts on plantation-level issues while lagging significantly in processing and trading segments of the supply chain.

Overall, the robustness checks confirm the stability of the main regression results. The dominant role of supply chain integrity and the positive influence of public ownership remain consistent across different testing methods.

## DISCUSSION

### The Effect of Ownership Structure on ESG Transparency

The empirical results demonstrate that ownership structure, specifically public listing, has a significant positive effect on ESG transparency ($\beta = 2.13$, $p = 0.001$), leading to the acceptance of H1. This finding reinforces Agency Theory, which posits that public-listed companies face higher pressure to disclose information to reduce information asymmetry between managers and a diverse group of shareholders. In the palm oil sector, transparency serves as a signaling mechanism. Public companies use superior ESG disclosure to attract socially responsible investors and maintain their license to operate in global capital markets. The results align with the findings of Marquis and Toffel (2012), who argued that firms with higher corporate visibility are more likely to adopt standardized environmental practices and disclosures to mitigate reputational risks. Furthermore, Aman and Lucianetti (2025) noted that in emerging

markets, listing status remains a primary driver for voluntary disclosure as firms strive to meet international governance benchmarks.

**The Effect of Supply Chain Integrity on ESG Transparency**

The most dominant finding of this study is the overwhelming influence of Supply Chain Integrity on ESG transparency ($\beta = 0.994$, $p < 0.001$). This near-linear relationship suggests that for palm oil companies, ESG disclosure is not a separate boardroom narrative but an extension of operational reality. Companies that have successfully mapped their supply chains reaching down to smallholders and third-party mills possess the verified data required to satisfy the rigorous, evidence-based indicators of the SPOTT framework.

This finding provides strong empirical support for Stakeholder Theory, emphasizing that managing complex supply networks incentivizes openness to build trust with global value chain actors (Freeman & Dmytriyev, 2017). As argued by Bastian and Zentes (2013), supply chain transparency is a determinant of relationship quality in global trade. In the context of the European Union Deforestation Regulation (EUDR), operational control over the supply chain has become the primary engine of corporate accountability, where verbal policy commitments are deemed hollow without technical traceability (Lambin et al.,2018).

**The Effect of Media Exposure on ESG Transparency**

Contrary to Hypothesis 3 (H3), media exposure does not exert a significant influence on ESG policy transparency ($\beta = -0.005$, $p = 0.613$). This finding challenges the conventional application of Legitimacy Theory, which posits that firms facing intense public scrutiny tend to increase voluntary disclosures to repair their legitimacy gap and mitigate reputational damage.

Several explanations may account for this unexpected result. First, the palm oil industry may have reached a desensitization threshold regarding media criticism. Given the sector's long history of environmental controversies, routine media reports may no longer trigger substantive changes in formal policy disclosures. Second, there exists a potential decoupling between media pressure and corporate action. While media exposure can generate short-term reputational heat, SPOTT specifically evaluates the quality and availability of institutionalized policies and evidence-based reporting. Companies may respond to negative coverage through impression management or public relations efforts without updating formal, auditable disclosures required by the SPOTT framework.

Third, the nature of media exposure captured in this study (frequency of incidents) may not distinguish between negative, neutral, and positive coverage, nor capture the intensity or virality of such reports. High-profile scandals might prompt temporary responses, but sustained systematic improvements in transparency appear to require deeper operational changes rather than reactive communication. This aligns with previous literature suggesting that external pressures alone are often insufficient without corresponding internal capabilities. In the context of the palm oil sector, these findings imply that media-driven naming and shaming strategies, while valuable for raising awareness, may have limited direct impact on improving ESG disclosure scores unless accompanied by tangible enhancements in supply chain traceability.

**The Effect of Headquarters Location on ESG Transparency**

Hypothesis 4 (H4), which predicted higher ESG transparency among companies headquartered in regions with stringent ESG regulations, was also not supported ($\beta = 0.45$, $p = 0.557$). This result indicates a significant global regulatory and market convergence in sustainability expectations within the palm oil industry.

The finding supports the Brussels Effect thesis, whereby stringent European Union standards particularly the EU Deforestation Regulation (EUDR) have become de facto global

benchmarks. Multinational buyers, investors, and financial institutions now impose similar transparency requirements regardless of a company's headquarters location. As a result, even companies based in Indonesia or Malaysia must align with international expectations to maintain market access, diminishing the relative advantage previously enjoyed by firms headquartered in the EU, UK, or Singapore.

This convergence reflects the maturation of global commodity markets. International capital markets and downstream customers (especially in Europe and North America) have effectively exported high transparency standards across borders. Companies operating in producing countries face equivalent market pressures through buyer requirements, sustainability-linked financing, and reputational risks in global value chains. Consequently, headquarters location no longer serves as a strong differentiator of disclosure quality in 2025.

These findings carry important implications. For Indonesian palm oil companies, the results suggest that competitiveness in the global market depends less on geographical origin and more on the ability to develop world-class supply chain transparency systems. For regulators, this highlights the growing effectiveness of market-based mechanisms in driving sustainability standards, potentially complementing or even surpassing purely domestic regulatory efforts.

## CONCLUSION

This study demonstrates that supply chain integrity is the dominant determinant of ESG policy transparency among global palm oil companies, with public ownership serving as a secondary but significant driver. External factors including headquarters location and media exposure do not significantly influence transparency once internal operational capabilities are accounted for. The near-linear relationship between supply chain traceability and overall ESG scores underscores that credible policy disclosure is fundamentally rooted in a company's operational capacity to monitor and verify its supply chain.

For palm oil companies, particularly those in Indonesia, the practical implication is clear: investments in traceability infrastructure from fresh fruit bunch sourcing through downstream processing should take priority over external communication strategies or the pursuit of multiple certifications that may not translate into improved evidence-based disclosure. For policymakers, the findings suggest that mandating or incentivizing traceability infrastructure, including support for the 2.6 million smallholders who remain largely outside formal monitoring systems, is likely more effective than relying on media pressure or broad regulatory mandates alone.

This study is limited by its cross-sectional design, its focus on policy disclosure rather than field-level implementation, and the potential for endogeneity between supply chain capabilities and transparency scores. Future research could adopt longitudinal designs to capture changes over time, incorporate field-level performance metrics, or explore additional governance variables such as board sustainability committees, internal audit investments, and the role of digital traceability technologies.

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